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EXAMINER	
RAMAN, USHA	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/541,187	LAKHANI, ABDUL-KARIM	
	Examiner	Art Unit	
	Usha Raman	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2-9-04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-52* is/are rejected.

7)☒ Claim(s) *1, 3, 9-10, 13, 13, 22, 24, 27, 29-33, 48* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04-03-2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: part number 62 described in page 9, line 8 and part number 117 described in page 10, line 4. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: part numbers 1 and 69 from figure 4. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "21" has been used to designate both a bridger amplifier and a bi-directional amplifier in a feeder line in figure 1. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 1, 3, 9, 10, 13, 15, 22, 24, 27, 29, 30, 31, 32, 33, 48 are objected to because of the following informalities:

- In regards to claim 1, "node in said trunk", the node is at the beginning of the trunk or a fiber-terminating unit, and not "in" the trunk.
- In regards to claim 3, "said relatively high frequency band" should be changed to "said high frequency band" for consistency.
- In regards to claim 9, "to said ends" should be changed to "to said line feeder ends" in line 2 and "said feeder ends" should be changed to "said feeder line ends" for consistency. Additionally, a "head end connected to trunk" is claimed while the specification discloses that the head end is coupled to a return node, and a trunk is coupled to the return node and a trunk end.
- In regards to claim 10, "said devices" should be changed to "said two way communication devices"
- In regards to claim 13, "said system" should be changed to "said cable system" in line 2. In line 4, "indifferent" should be changed to "in different".
- In regards to claim 15, "said system should be changed to "said cable system"
- In regards to claim 22, "said head end" should be changed to "said cable head ends" in lines 1 and 5.
- In regards to claim 24, "said head end" should be changed to "said cable head end"

- In regards to claim 27, the auxiliary feeder line extends from the "said tap in a feeder line" but it does not include "the said tap" "in" the auxiliary feeder line.
- In regards to claims 29, 30, 31, 32, "said head end" should be changed to "said cable head end"
- In regards to claims 31, "said device" should be changed to "said two way communication device"
- In regards to claim 33, "first portions" should be changed to "first portion" in line 2.
- In regards to claim 48, "auxiliary line" should be changed to "auxiliary feeder line" in line 3 and "a high pass filters" should be changed to "high pass filters" in line 2.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. Claims 1-12, 17-18, 23-24, 26, 35-37, 40, and 49-50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "said head end" in lines 5 and 6. There is insufficient antecedent basis for this limitation in the claim.

Claim 9 recites the limitation "said low frequency band" in line 8. There is insufficient antecedent basis for this limitation in the claim.

Claim 26 recites the limitation "said major trunk" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 40 recites the limitation "said second frequency band" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 49 recites the limitation "the notched out frequency band" in line 4. There is insufficient antecedent basis for this limitation in the claim.

In regards to claim 11, it is unclear on the structure if the "first means" includes "second means" for generating signals or if "second means" comprises means for generating signals from transmitting in said low frequency band, i.e. if second means is an aggregate component of first means or if it is another component.

In regards to claim 17, it is unclear if "said means" refers to the "means" from claim 15 or "means responsive to signals for re-transmitting signals in a low frequency band" from claim 16.

In regards to claim 18, it is unclear as whether the "said devices" from line 7 refers to "said devices" from line 5 or to "devices configured to transmit in a first frequency band".

In regards to claim 23, it is ambiguous if "said first direction" is toward "trunk end" or toward "feeder line end".

In regards to claim 24, it is ambiguous as to whether "a return node" refers to "said return node" from claim 21 or another return node.

In regards to claims 35 and 37 "about" 300-335 MHz and 50-700 MHz renders the frequency bands as indefinite.

In regards to claim 42, "a cable system including high to low frequency converter at least first and second feeder line ends" is unclear. It is not clear whether it is a system including "a high to low frequency converter at at least a first and second line feeder ends" or if it is a system including a "high to low frequency converter and at least a first and second line feeder ends".

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 13-17, 26-27, 35-36, 42-45 and 49-50 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In regards to claim 13, a trunk with taps disposed thereabout is claimed while the specification does not disclose such a structure. The examiner has examined this as "line feeders with taps" disposed there about for rejections below.

In regards to claim 26, the specification only discloses an auxiliary feeder line connected to a feeder line via a band stop filter. It does not disclose "each" (or any) feeder lines connected to the major trunk line via a band stop filter. The examiner has examined this claim as "said auxiliary feeder line connected to a feeder line via a band stop filter".

In regards to claim 35, the disclosure illustrates the frequency band of 50-750 MHz with 300-335 MHz notched out for upstream communication. The specification does not support a frequency band of 5-1000 MHz for this particular instance.

In regards to claims 42 and 49, the disclosure describes an auxiliary feeder line extending from a feeder line via a "tap" and not a "bridger amplifier" as claimed.

9. Claims 18-20, and 38-41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In regards to claims 18 and 19, a two-way communication device that can receive and transmit in a first frequency band is claimed. While this is stated in the disclosure in page 9, lines 11-13, further description of the set top box in figure 10, on page 12, show that the two way communication system doesn't in

fact receive and transmit at the first frequency band, but transmit at different portions (mutually exclusive) of a frequency band. Claims 18 and 19 in this broadest interpretation suggest a bi-directional communication (i.e. receive and transmit) over the entire, same frequency spectrum (say from 50-750 MHz), when in fact; the two way communication device only receives from 50-300 MHz and from 335 to 750 MHz and transmits only in 300-335 MHz.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 18, 19 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Bodeep et al. (EP 0 695 092).

In regards to claim 18, Bodeep's cable system includes a head end (110) and a plurality of two way communication devices (210, 220, 230, 240), in which signals only in a first frequency band are transmitted in a forward direction (by forward amplifier 202) from head end, and signals only in a second frequency band (down-converted at the mini fiber node) are transmitted in a return direction to the head end, the system being characterized by unacceptable noisy portions

at communication devices for signals in (traditional upstream frequency band) the second frequency band (5-40 MHz), the system including devices (EU)configured to transmit in first frequency band (end users transmit at a higher frequency band, above 30 MHz), system including means (frequency conversion module, 262 and 263) responsive to signals in the first frequency band from the communication devices and down-converting and retransmitting the signals in a second frequency band. Note figure 2 and relevant descriptions in column 5, lines 5-22 and line 58 and column 6, lines 1-4 and lines 21-25.

In regards to claim 19, Bodeep's cable system includes forward amplifier (202) to pass signals in a first frequency band and the system includes a two-way communication device (EU 210, 220, 230) for receiving and transmitting in the first frequency band (frequencies above 30 MHz). Note figure 2 and column 6, lines 21-25 of Bodeep et al.

In regards to claim 42, Bodeep's cable system includes a "down-converter" (high to low converter at the feeder line ends. Note reference numbers 262 and 263 in figure 2 and description column 5 line 58 and column 6, lines 1-4.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time

the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bodeep et al. (EP 0 695 092 A1).

In regards to claim 20, Bodeep does not disclose that the two-way communication device is a set top box. Official notice is taken that a set top box is a well-known two-way communication device. It would have been obvious to use a set top box in the cable system of Bodeep et al. to receive downstream television signal and transmit upstream return signals in a relatively high frequency band as taught by Bodeep.

14. Claims 1-3, 7, 9-17, 21-25, 28-33, 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Bodeep et al. (EP 0 695 092 A1).

In regards to claims 1 and 9, 21 applicant's admitted prior art describes a cable system comprising a head end and a return node connected to a major trunk, including a plurality of feeder lines, wherein each of the feeder lines is connected between a node in the trunk and a feeder line end. The feeder lines include a plurality of bi-directional amplifiers and taps there along, and a two-way communication device (namely a set top box) connected to each of the taps. The bi-directional amplifiers pass only the signals from head end to the two way

communication devices in a high frequency band in the forward direction and pass only the return signals in a low frequency band to head end.

The applicant's admitted prior art however, lacks a feeder line end including a receiver for receiving transmission in high frequency band and means for converting signals in high frequency band to signals in low frequency band. In addition to that, the prior art's two-way communication device lacks the capability of both receiving and transmitting signals in a high frequency band. Therefore the prior art cable system is susceptible to high ingress noise levels in the return path arising from the cable drops and other in house wiring Bodeep et al. teach a method of clearing the ingress noise in the return path by transmitting the return signals from end user units downstream over the feeder line to a feeder line end comprising a receiver and converter apparatus, which receives the return signals and converts them and retransmits the upstream signal. The return signals from the end users are collected at a mini fiber node, that is deployed in the furthest downstream location on cable 201 and therefore is the line feeder end. A high frequency band B2b, typically above 30MHz is allocated for the return signals, in which the end units transmit the return signals. The end units of Bodeep et al. therefore are capable of receiving signals in high frequency band and transmitting return signals at a "higher frequency" (B2b, above 30MHz) than the conventional low frequency band of 5-40 MHz where majority of the ingress noise lies. The MFN receives the return signals, filters out the noise and downstream portion of the signal, up- or down-converts the return

signals and transmits the return signal back to the head end at a previously assigned frequency band. Note reference numbers 262 and 263 in figure 2 and relevant descriptions in column 5, lines 5-22 and line 58 and column 6, lines 1-4 and lines 21-25 of Bodeep et al.

It would have been obvious to one of ordinary skill at the time of invention to modify applicants admitted prior art system with the teachings of Bodeep et al. by configuring the end units to transmit return signals at a higher frequency band, and transmitting the return signals from the end units over a downstream path to a line feeder end, where the return signal is received and filtered to remove ingress noise and other downstream signals and down-converted to a previously assigned frequency of 5-40MHz) and re-transmitted back to the head end at that frequency. The motivation would be to improve the prior art cable system by reducing ingress noise generated in taps and subscriber homes without having to change the entire coax network (i.e. the bi-directional amplifiers and diplexers in line feeders and trunks of the existing cable system).

In regards to claim 2, the mini fiber node in the system of Bodeep et al. has an RF amplifier (264) for amplifying the down-converted signals before transmission. Note figure 2 and description in column 5, line 11 in Bodeep et al.

In regards to claim 3, both applicant's admitted prior art and Bodeep et al. disclose that the end unit/set top box, (two way communication device) is capable of receiving signals at a high frequency band. Since Bodeep et al. disclose that the EU transmit return signals above 30 MHz, a "relatively" higher

frequency than conventional return signal spectrum of 5-40 MHz of the prior art two way communication devices, the two way communication device in the modified system has means to receive and transmit signals in a "relatively" high frequency. Note column 6, lines 21-25 in Bodeep et al.

In regards to claims 7 and 10, 28 the two-way communication device in the applicant's admitted prior art is a set top box.

In regards to claim 11, the line feeder end (mini fiber node) in the cable system of Bodeep et al. has receiver means (the mini fiber node) for receiving signals in high frequency and a transmitter means to re-transmit (generate) the digital upstream signals in low frequency band. Note reference numbers 261 and 265 in figure 2 of Bodeep et al.

In regards to claim 12 and 25, Bodeep et al. discloses that there is a frequency conversion module that can up-convert or down-convert the received signals. Note figure 2, reference numbers 263 and 262 and description in column 6, lines 1-4. It would have been obvious to use a down conversion module as taught by Bodeep to down convert the received ("return") signals in order to transmit the upstream signals at a previously assigned frequency band.

In regards to claim 22, the cable system described as applicant's admitted prior art has a head end configured to receive transmission only in low frequency band and feeder lines including bi-directional amplifiers for amplifying transmissions in a high frequency band only in a first direction towards feeder

line ends and for amplifying transmissions in low frequency band only in a second direction towards head end.

In regards to claim 23, applicant's admitted prior art cable system has bi-directional amplifiers in major trunk for amplifying transmissions in high and low frequency bands in the first and second directions respectively.

In regards to claim 24, the major trunk extends from a return node to a trunk end and the return node includes a laser and is connected to head end via a fiber optic cable in applicant's admitted prior art system.

In regards to claims 29, 30, 31, 32, 33 Bodeep discloses that the end units transmit return path signals in a frequency band, B2b, that is typically above 30 MHz. Bodeep further illustrates that B2b is a frequency band that doesn't overlap with the frequency bands that downstream signals are transmitted over. Note figure 2, frequency spectrum and column 6, lines 21-25. The applicant does not disclose any specific advantage of "notching" out a portion of the existing downstream frequency band to transmit the upstream signals from the set top boxes, instead of simply transmitting above the downstream frequency band, it would have been a matter of design choice to "notch" out a portion of the downstream band instead of transmitting at a frequency outside the conventional downstream frequency band, as long as the frequency bands for the upstream and the down stream signals remain mutually exclusive for non-interfering transmission.

In case of such a modification, one of ordinary skill would also realize that the end user units (two way communication devices) would need to be configured to receive signals at the notched out downstream signal and to transmit upstream signals in the "notch". It would have been obvious to one of ordinary skill in the art at the time of the invention that this "notching out" at the receiver end of the set top box is accomplished with a band stop filter at the receiver end and the transmission of signals in the "notch" is accomplished with a band pass filter at the transmitter. The band stop filter allows for all but a first portion of a frequency band to be received by the receiver and the band pass filter allows transmitting in the first portion of the frequency band.

In regards to 35 and 36, any portion of the high frequency band can be notched out as long as the end user units are configured to block and transmit in the respective notched frequency bands. Since, the applicant' doesn't disclose any specific advantage to notching out frequencies 300-335MHz from the downstream frequency band and transmitting the upstream signal from the end units at 300-335 MHz, it would have been a matter of design choice to notch out 300-335 MHz from the downstream portion and transmit the upstream signals from the end units in that notched out frequency band.

In regards to claim 13, applicant's admitted prior art cable system includes a cable head end and a major trunk, where the trunk has bridger and bi-directional amplifiers there along, where at least one feeder line is connected between one of the bridger amplifiers and a feeder line end, the feeder line

including at least one set top box. The set top box in the prior art system does not transmit and receive in different portions of a high frequency band. Bodeep teaches a cable system, where the set top box is configured to transmit return signals at a "higher" frequency than conventional set top boxes (i.e. above 30 MHz, illustrated by B2b band in figure 2 and column 6, lines 21-25 of Bodeep et al.). The return signals are received downstream by a receiver at the line feeder end, where it is demodulated and down-converted to a lower frequency for re-transmission to the cable head end. Note column 5, lines 5-10, line 58 and column 6, lines 1-4 of Bodeep et al. It would have been obvious to modify the prior art cable system with Bodeep's feeder line end and two-way communication device, where, the set top box is capable of receiving and transmitting in different portions of a high frequency band. The motivation would be to reduce ingress noise by transmitting return signal at a higher frequency band.

In regards to claim 14, applicant's admitted prior art discloses that the head end is configured to receive signals only in a low frequency band (5-40 MHz) and transmit signals in a high frequency band (50-750).

In regards to claims 15, Bodeep discloses that the end units transmit return path signals in a frequency band, B2b that is typically above 30 MHz. Note column 6, lines 21-25 and figure 2 frequency spectrum. Bodeep et al. further illustrate that B2b is a frequency band that doesn't overlap with the frequency bands that downstream signals are transmitted over. The applicant does not disclose any specific advantage of "notching" out a portion of the

existing downstream frequency band to transmit the upstream signals from the set top boxes, instead of simply transmitting above the downstream frequency band, it would have been a matter of design choice to "notch" out a portion of the downstream band instead of transmitting at a frequency outside the conventional downstream frequency band, as long as the frequency bands for the upstream and the down stream signals remain mutually exclusive for non-interfering transmission.

In regards to claims 16 and 17, when the end unit transmits signal at the "notched" out portion, it is still received downstream by the line feeder end, where it is down-converted and retransmitted to the head end in the same manner as described above for claim 1.

15. Claims 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bodeep et al. (EP 0 695 092 A1 and US Pat. 5,864,672).

In regards to claims 43, Bodeep's cable system employs a uni-directional (202) amplifier and therefore lacks a forward amplifier that carries signals in the high frequency band and reverse amplifier that carries signal in the low frequency band. Bodeep however discloses in a related patent, that a bi-directional amplifier can be used in the cable system (note column 5, lines 31-33 in the US Pat. 5,864,672). Official notice is taken that bi-directional amplifiers are well known and typically comprise a forward amplifier to transmit high frequency signals in a forward direction and a reverse amplifier to transmit low frequency

signals in a reverse direction. Therefore it would have been obvious to use such bi-directional amplifier in the above system, where the low frequency band up stream can be transmitted back to the head end.

In regards to claim 44, Bodeep's cable system discloses that the end user units are capable of transmitting at a higher frequency (above 30 MHz) than the conventional end units (5-40 MHz), illustrated by B2b in figure 2. Note column 6, lines 21-25. Bodeep fails to disclose that the end user unit is a set top box. Official notice is taken that set top box is a well known two way communication device such as one that is taught in applicant's admitted prior art. Therefore it would have been obvious to use a set top box as a two way communication device, with Bodeep's added capability of being able to transmit and receive signals in a high frequency band. The motivation would be to reduce ingress noise in the return path and provide increased upstream bandwidth.

16. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Bodeep et al. (EP 0 695 092 A1) as applied to claims 1, above, and further in view of Baran et al. (US Pat. 6,094,211).

The modified cable system as described in claim 1 lacks a high pass filter between the two way communication system and the feeder line.
Baran discloses that the use of high pass filter is well known in the art to effectively block noise coming from the house having TV sets by placing such

high pass filters on the drop cables (which is between feeder line and end user unit. Note column 2, lines 40-41 and lines 45-50 in Baran et al. Baran teaches that this high pass filter is used in a one-way cable system, where only downstream signals are provided to subscribers and any low frequency upstream noise is blocked by the filter. However, one of ordinary skill can realize from Baran's teaching that a high pass filter can still be used in a two-way cable system if the end users received and transmitted signals at a higher frequency range than the frequency band at which ingress noise is high. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to apply Baran's prior art knowledge to use a high pass filter in the drop cables as taught by Baran, in the modified cable system, where the two way communication devices are configured to receive and transmit in a high frequency band. The motivation would be to keep the low frequency ingress noise generated at homes from entering the feeder lines.

In regards to claim 8, the two-way communication device in the applicant's admitted prior art is a set top box.

17. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bodeep et al. (EP 0 695 092 A1 and US Pat. 5,864, 672) as applied to claim 44 above, and further in view of Baran et al. (US Pat. 6,094,211).

In regards to claim 45, the modified cable system as described in claim 44 lacks a high pass filter between the two-way communication system and the feeder line.

Baran discloses that the use of high pass filter is well known in the art to effectively block noise coming from the house having TV sets by placing such high pass filters on the drop cables (which is between feeder line and end user unit. Note column 2, lines 40-41 and lines 45-50 in Baran et al. Baran teaches that this high pass filter is used in a one-way cable system, where only downstream signals are provided to subscribers and any low frequency upstream noise is blocked by the filter. However, one of ordinary skill can realize from Baran's teaching that a high pass filter can still be used in a two-way cable system if the end users received and transmitted signals at a higher frequency range than the frequency band at which ingress noise is high. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to apply Baran's prior art knowledge to use a high pass filter in the drop cables as taught by Baran, in the modified cable system, where the two way communication devices are configured to receive and transmit in a high frequency band. The motivation would be to keep the low frequency ingress noise generated at homes from entering the feeder lines.

18. Claim 38, 39, 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bodeep et al. (EP 0 695 092 A1) as applied to claims 19 above, and further in view of Baran et al. (US Pat. 6,094,211).

In regards to claims 38, the cable system above lacks a high pass filter between the tap and the communication device. Baran teaches of using a high pass filter between a tap and a communication device (i.e. at the drop cable) as discussed above for claim 4. Note column 2, lines 40-41 and lines 45-50 in Baran et al. It would have been obvious to one or ordinary skill to modify the prior art system in view of Bodeep in further view of Baran by adding high pass filter at the drop cable to prevent any ingress noise from entering the feeder lines.

In regards to claim 39 and 40, the high pass filter is configured to block ingress noises that typically arise in the 5-40 MHz range. The reverse amplifiers pass signals of the 5-40 MHz from the feeder line end to the head end.

In regards to claim 41, the feeder line end has down-converting means to receive signals from the communication devices at one frequency and then down-convert it to another frequency band for transmission to the head end in the previously allocated upstream frequency band.

19. Claims 5, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Bodeep et al. (EP 0 695 092 A1) as applied to claim 1 and 21, above, and further in view of McAlear (US Pat. 6,598,232).

In regards to claim 5, 26, and 27, the modified cable system includes a feeder line connected to a major trunk via a bridger amplifier, an auxiliary feeder line extending from the feeder line via a tap, the feeder lines and auxiliary feeder lines including taps disposed thereabout, from which two way communication devices are coupled via drop cables, the two way communication devices being configured to transmit and receive at a high frequency, and a receiver and a frequency conversion modules placed at the feeder line ends (as well the auxiliary feeder line) to receive signals in transmitted by the two way communication device in a high frequency band and a high-to-low frequency converter at the end to down-convert the received signals to a lower frequency band at which it is transmitted back to the head end. The modified cable system however lacks a band stop filter at the tap that connects to the auxiliary feeder line.

McAlear teaches using a band block filter placed on a feeder line near a junction to trunk line or a secondary trunk line that prevents signals or noise in a particular band from entering the trunk lines. Note column 25, lines 12-23 and figure 8 of McAlear. While the express band block filter of McAlear is used to block the upstream band from entering the trunk lines, this principle can be used in to keep any signals in one feeder line from entering another feeder line or trunk at a junction. Therefore it would have been obvious to one of ordinary skill to further modify the prior art system in view of McAlear's teachings by adding a band block (stop) filter at the start of an auxiliary line in order to prevent any

signal other than the conventional down stream signals from the cable head end from being transmitted from one feeder line into the auxiliary feeder lines.

20. Claim 46, 47, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Bodeep et al. (EP 0 695 092 A1) and further in view of McAlear (US Pat. 6,598,232).

In regards to claim 46, applicant's admitted prior art cable system includes a feeder line and an auxiliary feeder line extending from the feeder line via a tap, where, the auxiliary feeder line has a feeder line end. The prior art system however lacks a receiver means and high-to-low converter means at the feeder line end.

Bodeep teaches a method of reducing ingress noise in a cable system, where two way communication device (end user units) are configured to receive signals and transmit signals at a relatively high frequency. Note column 6, lines 21-25 in Bodeep et al. The return signals transmitted from the two-way communication devices are transmitted downstream to a line feeder end, where it is received and down-converted and re-transmitted back to the cable head end. It would have been obvious to one of ordinary skill to modify applicant's admitted prior art system with the teachings of Bodeep et al. by configuring the two way communication devices to receive and transmit at a high frequency, and transmit the return signals from the two way communication device downstream to a line

feeder end, where it is received and down-converted and retransmitted upstream in a previously allocated bandwidth (5-40 MHz) to the cable head end.
This modification however still lacks an auxiliary feeder line including a band stop filter at the tap that is connected to a feeder line.

McAlear teaches using a band block filter placed on a feeder line near a junction to trunk line or a secondary trunk line that prevents signals or noise in a particular band from entering the trunk lines. Note column 25, lines 12-23 in McAlear et al. While the express band block filter of McAlear is used to block the upstream band from entering the trunk lines, this principle can be used in to keep any signals in one feeder line from entering another feeder line or trunk at a junction.

It would have been obvious to one of ordinary skill to further modify the cable system in view of McAlear's teachings by adding a band block (stop) filter at the start of an auxiliary line in order to prevent any signal other than the conventional down stream signals from the cable head end from being transmitted from one feeder line into the auxiliary feeder lines.
In regards to claim 47, the modified prior art system has bi-directional amplifiers in the auxiliary feeder line.

In regards to claim 49, applicant's admitted prior art cable system includes a feeder line and an auxiliary feeder line extending from the feeder line via a tap, where, the auxiliary feeder line has a feeder line end. The prior art system

however lacks a receiver means and high-to-low converter means at the feeder line end.

Bodeep teaches a method of reducing ingress noise in a cable system, where two-way communication device (end user units) are configured to receive signals and transmit signals at a relatively high frequency. Note column 6, lines 21-25. The return signals transmitted from the two-way communication devices are transmitted downstream to a line feeder end, where it is received and down-converted and re-transmitted back to the cable head end.

It would have been obvious to one of ordinary skill to modify applicant's admitted prior art system with the teachings of Bodeep et al. by configuring the two way communication devices to receive and transmit at a high frequency, and transmit the return signals from the two way communication device downstream to a line feeder end, where it is received and down-converted and retransmitted upstream in a previously allocated bandwidth (5-40 MHz) to the cable head end. Bodeep et al. also disclose that the end units transmit return path signals in a frequency band, B2b, that is typically above 30 MHz. Bodeep further illustrates that B2b is a frequency band that doesn't overlap with the frequency bands that downstream signals are transmitted over. The applicant does not disclose any specific advantage of "notching" out a portion of the existing downstream frequency band to transmit the upstream signals from the set top boxes, instead of simply transmitting above the downstream frequency band, it would have been a matter of design choice to "notch" out a portion of the downstream band

instead of transmitting at a frequency outside the conventional downstream frequency band, as long as the frequency bands for the upstream and the down stream signals remain mutually exclusive for non-interfering transmission. Since the two way communication transmits the return signal downstream over the notched out frequency band, it is received by the receiver at the line feeder end at that notched out frequency band and then down-converted to a lower frequency band.

McAlear teaches using a band block filter placed on a feeder line near a junction to trunk line or a secondary trunk line that prevents signals or noise in a particular band from entering the trunk lines. Note column 25, lines 12-23 of McAlear et al. While the express band block filter of McAlear is used to block the upstream band from entering the trunk lines, this principle can be used in to keep any signals in one feeder line from entering another feeder line or trunk at a junction.

It would have been obvious to one of ordinary skill to further modify the cable system in view of McAlear's teachings by adding a band block (stop) filter at the start of an auxiliary line in order to prevent any signal other than the conventional down stream signals from the cable head end from being transmitted from one feeder line into the auxiliary feeder lines.

21. Claim 34 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peyrovian (US Pat. 5,768,682).

In regards to claim 34, Peyrovian discloses a cable system with reduced ingress noise, where the upstream signals are transmitted by a subscriber premises equipment coupled to the NIU to the cable head end at a frequency above conventional downstream band (50-750 MHz). Note figure 2, and column 1, lines 64-67, column 2, lines 1-4, and column 3, lines 39-53 of Peyrovian et al. Peyrovian however does not specify that the customer premises equipment is a set top box. Official notice is taken that two-way communication devices such as a set top box or cable modem is a well-known customer premises equipment in the cable system network and can be used in Peyrovian's system. Official notice is also taken that diplex filters are available in a two-way communication system such as set top boxes to separate the upstream from the downstream transmission paths. Therefore it would have been obvious to use a set top box as the end user unit in the system of Peyrovian, the set top box further comprising a diplex filter such that the low pass filter transmit the downstream signal (50-750 MHz) to the set top box and the high pass filter transmit signals (750-1000 MHz) from the set top box to the cable head end in order to comply with the transmission scheme already disclosed by Peyrovian to reduce ingress noise.

In regards to claim 37, Peyrovian's cable system disclose that the downstream portion is transmitted to the subscriber in the 50-750 MHz range (conventional downstream band in the US) and the upstream portion transmitted from the subscriber unit to the cable head end in the 750-1000 MHz range. Note

column 3, lines 39-53 of Peyrovian. While the applicant admits the conventional downstream band being 50-750 MHz in prior art systems, applicant does not disclose any specific advantage of changing the downstream transmission band to 50-700 MHz. Therefore it would have been a matter of design choice to modify the system of Peyrovian to transmit downstream signals at a frequency of 50- 700 MHz and transmit the upstream from 700-1000 MHz without drifting from the scope of Peyrovian's teachings.

22. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Peyrovian (US Pat. 5,768,682) as applied to claim 34 above, and further in view of Baran et al. (US Pat. 6,094,211).

In regards to claim 52, the modified cable system of Peyrovian lacks a high pass frequency connected to the feeder line.

Baran teaches of using a high pass filter between a tap and a communication device (i.e. at the drop cable) as discussed above for claim 4. Baran teaches that this high pass filter is used in a one-way cable system, where only downstream signals are provided to subscribers and any low frequency upstream noise is blocked by the filter. Note column 2, lines 40-41 and lines 45-50 of Baran et al. However, one of ordinary skill can realize from Baran's teaching that a high pass filter can still be used in a two-way cable system if the end users received and transmitted signals at a higher frequency range than the frequency band at which ingress noise is high. It would have been obvious to

one or ordinary skill to further modify the cable system in view of Baran by adding high pass filter at the drop cable to prevent any ingress noise from entering the feeder lines. The motivation would be to prevent ingress noise from entering the feeder lines. In order to prevent the ingress noise from entering the feeder lines and to allow transmission of signals from the end units to the feeder line it would have been obvious to use a low high pass filter that is lower than the low pass and the high pass filters to allow transmission of return signals transmitted from the end units to the line feeder, i.e. to use a low-high pass filter that passes all frequencies above 50 MHz.

23. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Bodeep (EP 0 695 092) as applied to claim 33 above, and further in view of Baran et al. (US Pat. 6,094,211).

In regards to claim 52, the modified cable system lacks a high pass frequency connected to the feeder line.

Baran teaches of using a high pass filter between a tap and a communication device (i.e. at the drop cable) as discussed above for claim 4. Baran teaches that this high pass filter is used in a one-way cable system, where only downstream signals are provided to subscribers and any low frequency upstream noise is blocked by the filter. Note column 2, lines 40-41 and lines 45-50 of Baran et al. However, one of ordinary skill can realize from Baran's teaching that a high pass filter can still be used in a two-way cable system if the

end users received and transmitted signals at a higher frequency range than the frequency band at which ingress noise is high. It would have been obvious to one or ordinary skill to further modify the cable system in view of Baran by adding high pass filter at the drop cable to prevent any ingress noise from entering the feeder lines. The motivation would be to prevent ingress noise from entering the feeder lines.

24. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Bodeep (EP 0 695 092 A1) and McAlear (US Pat. 6,598,232) as applied to claim 46 above, and further in view of Baran et al. (US Pat. 6,094,211).

In regards to claim 48, the above-modified system as discussed in claim 46 lacks a high pass filter between the feeder lines and the two-way communication device. Baran teaches that it is well known in the art to use a high pass filter between a tap and a communication device (i.e. at the drop cable) in order to keep ingress noise from entering feeder lines. Note column 2, lines 40-41 and lines 45-50 of Baran et al. Baran teaches that this high pass filter is used in a one way cable system, where only downstream signals are provided to subscribers and any low frequency upstream noise is blocked by the filter.

However, one of ordinary skill can realize from Baran's teaching that a high pass filter can still be used in a two-way cable system if the end users received and transmitted signals at a higher frequency range than the frequency

band at which ingress noise is high. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to apply Baran's prior art knowledge to use a high pass filter in the drop cables as taught by Baran, in applicant's prior art system modified in view of Bodeep and McAlear, where the two way communication devices are configured to receive and transmit in a high frequency band. The motivation would be to keep the low frequency ingress noise generated at homes from entering the feeder lines.

25. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Bodeep (EP 0 695 092 A1) and McAlear (US Pat. 6,598,232) as applied to claim 49 above, and further in view of Baran et al. (US Pat. 6,094,211).

In regards to claim 50, the above-modified system as discussed in claim 46 lacks a high pass filter between the auxiliary feeder line and the two-way communication device. Baran teaches that it is well known in the art to use a high pass filter between a tap and a communication device (i.e. at the drop cable) in order to keep ingress noise from entering feeder lines. Note column 2, lines 40-41 and lines 45-50 of Baran et al. Baran teaches that this high pass filter is used in a one-way cable system, where only downstream signals are provided to subscribers and any low frequency upstream noise is blocked by the filter.

However, one of ordinary skill can realize from Baran's teaching that a high pass filter can still be used in a two-way cable system if the end users

received and transmitted signals at a higher frequency range than the frequency band at which ingress noise is high. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to apply Baran's prior art knowledge to use a high pass filter in the drop cables as taught by Baran, in applicant's prior art system modified in view of Bodeep and McAlear, where the two way communication devices are configured to receive and transmit in a high frequency band. The motivation would be to keep the low frequency ingress noise generated at homes from entering the feeder lines.

26. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Bodeep et al. (EP 0 695 092 A1) and Baran et al. (US Pat. 6,094,211) as applied to claim 4 above, and in further view of McAlear (US Pat. 6,598,232).

In regards to claim 6, the modified system as discussed in claim 4 lacks a band stop filter at the auxiliary feeder line.

McAlear teaches using a band block filter placed on a feeder line near a junction to trunk line or a secondary trunk line that prevents signals or noise in a particular band from entering the trunk lines. Note column 25, lines 12-23 in McAlear. While the express band block filter of McAlear is used to block the upstream band from entering the trunk lines, this principle can be used in to keep any signals in one feeder line from entering another feeder line or trunk at a junction.

It would have been obvious to one of ordinary skill to further modify the prior art system in view of McAlear's teachings by adding a band block (stop) filter at the start of an auxiliary line in order to prevent any signal other than the conventional down stream signals from the cable head end from being transmitted from one feeder line into the auxiliary feeder lines.

Conclusion

27. Freyman (WO 96/24207) teaches the method of clearing the ingress noise from a desired frequency band by accepting signals in a first frequency band different from the desired frequency band, filtering out or blocking the noise in the desired frequency band and then converting the signals from the first frequency band to the desired frequency band. While Freyman filters out the noise at the outdoor subscriber unit, Freyman's technique of modulating the upstream frequency to a higher frequency band, filtering the noise and converting the frequency back to the desired frequency band is relevant to applicant's methods of clearing ingress noise.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Usha Raman whose telephone number is (703) 305-0376. The examiner can normally be reached on Mon-Thu: 9am -7pm, and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Faile can be reached on (703) 305-4380. The fax

phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PATENT EXAMINER